H = elevation head measured from the water source to the point of discharge
L_j = total length of pipe in reach j
m = number of land use classifications
n = total number of pipe segments from water source to outlet
o = output of the system
P = optimum total installation cost of the pipe network
Q_j = flow in pipe reach j
r_i = expected return from i^{th} parcel of land
R = total expected return from the project
R_s = relative sensitivity
S_j = friction loss associated with pipe diameter d_j of segment j
u = total number of pipe reaches
V_j = velocity of water in pipe of diameter d_j in segment j
w_i = water requirements for ith parcel of land
W = total water demand for project
X_i = optimum length of pipe i in a reach
$\$_a$ = absolute sensitivity

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Anuran Locomotion—Structure and Function: The Jumping Forces of Frogs

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The flight of a jumping frog has been frequently compared to the trajectory of a missile or projectile (Gray, 1953; Gans and Rosenberg, 1966; Calow and Alexander, 1973). As such, the general ballistic equation and its related equations with minor modifications have been accepted as adequate mathematical descriptors of a frog's jump. To date, these equations have been examined only by using a single value of terminal velocity at liftoff or distance jumped (Gray, 1968; Calow and Alexander, 1973). Our goal has been to record the maximum force at liftoff in a variety of frog species in order to determine if our measure of force and the general ballistic equation or a modification thereof provide a reasonable estimate of terminal velocity and distance jumped.